Chapter 4, Environmental Consequences and Mitigation

4.1 Introduction

This RMPA/EA assesses the effects of the proposed action and alternatives. The proposed action is the transfer of 120 acres of land to the State of New Mexico under R&PP Act, the construction and operation of the proposed State and BLM Interpretive Center, and possible changes in management practices on federal public lands surrounding the proposed Center to support the goals of the Center.

"Effects" are considered to be the difference between the total expected changes in each affected resource with the proposed action compared to changes that could be expected in the absence of the proposed action. The RMPA/EA interdisciplinary team has reviewed possible effects in their areas of resource expertise in terms of their context and intensity and, where appropriate, has identified mitigating measures that may reduce effects if those effects are predicted to be adverse.

In the assessments of individual resources, the discussion is commensurate with the level of anticipated effect. Resources which could be affected by (or which could affect) the proposed action are discussed in greater depth. Those where no effect is anticipated may be simply noted.

4.2 Assumptions and Guidelines

For the purpose of analyzing the proposed action and alternatives, the following assumptions were made:

- The approval of the State's application for 120 acres of land under R&PP Act will result in changes in management of the subject land including the construction and operation of the proposed Center.
- Construction of the proposed Center will entail surface disturbance within the 120 acres, along the access road, and will require additional utilities access for electrical power and telephones, in accordance with the architect's site plan.
- If constructed, the Center would be a permanent installation with no foreseen closure date.
- The 120 acres will be fenced as a compound for its purposes.
- If constructed, the Center will be promoted as a visitor destination resulting in an increase in public use of a presently little used area.
- For consideration of management alternatives for the surrounding public lands, the relatively natural surroundings of the proposed location are a major reason for the application for this location. Views to and from the proposed Center location are

important, but some are more important than others. Views along the access road to the location, and views from the location, northeast toward Mesa Del Contadero and then in an arc to the southeast to the Fra Cristóbal mountain range are the most important for the goals of the proposed Center.

- Short-term impacts are defined as those which would occur during the construction of the facilities. Long-term impacts are those which would continue during operation of the Center.
- An irreversible or irretrievable commitment of a resource occurs when a resource is consumed, committed, or lost due to an action. A resource is committed irreversibly when the current and/or potential productivity of that resource is lost, and once lost, cannot be regained.
- Cumulative impacts are defined to mean the total of all effects, including both direct and indirect impacts on a given resource or ecosystem of all actions taken, no matter who (federal, non-federal, or person) has taken the actions.

4.3 Consideration of Issues

As described in Chapter 5, the public scoping process included briefings by the BLM and State for the Socorro and Sierra County Commissions and the city governments of the cities of Socorro and Truth Or Consequences, personal consultations with the BLM grazing allottee, letters and consultations with surrounding grazing allottees, letters to Indian tribes who have expressed interest in the region in the past, a Federal Register Notice announcing the intent to conduct this RMPA/EA, newspaper articles, and approximately 250 mailed announcements for public meetings to identify issues which might be raised by the proposed action. The public meetings were well-attended and were reported on by local newspaper articles, which included information on how to submit written comments during the comment period.

The public scoping process raised a number of issues and numerous comments. Alternatives to the proposed action are developed after scoping, specifically to include issues raised by the public. The issues identified during scoping have had major effects upon the development of alternatives for this proposed project.

Prior to initiating the RMPA/EA process, the possibility was raised of administratively withdrawing approximately 11,000 acres of public lands surrounding the proposed Center location from mineral entry as a temporary step to preserve the relatively natural surroundings. This raised concern among some of the public, and the related issue of multiple uses of the surrounding public lands was the predominant issue raised in the scoping process. Section 2.4 and Chapter 5 provide more information on alternatives and public participation.

The range of alternatives which were developed for the surrounding public lands were

formed in full consideration of public comments. No extreme alternatives were included (such as total exclusion or total development) because such alternatives are not required for any resource or management purpose. The alternatives for stipulations on surrounding public lands, including the "no action" alternative (continue existing management practices), are all real possibilities which could be reasonably implemented. The analyses of the interdisciplinary team provides the basis for a preferred alternative among several viable alternatives.

Other issues raised during scoping, such as hunting and access to the Rio Grande, are discussed in the individual resource analyses below, as are more technical issues such as on-site erosion potential, safety of livestock, access to the Interstate highway etc. All of the issues and comments received are summarized in Appendix D.

4.4 Additional Alternatives

During public scoping, minor issues were raised concerning the site location or construction proposal (for example, why the site was selected and why the building looks as it does). Review by the RMPA/EA interdisciplinary team has not raised any issues with these aspects of the proposal which would prompt additional alternatives. The numerous alternatives documented in the site selection process and design evolution process by the State for the facilities are, therefore, considered adequate and consistent with the purposes of this RMPA/EA.

As described in the preceding section, the alternatives which include management stipulations for surrounding public lands were developed in consideration of issues raised during scoping. Four alternatives involving some level of change in management stipulations on surrounding lands and one alternative involving no change in management were defined and analyzed in terms of their effects on the various resources.

4.5 No Action Alternatives

Components of Proposed Action	Alternatives	No Action
1.) Transfer of 120 acres from BLM to State	1 through 5	Deny R&PP Act Application
2.) Construction of facilities on the land	1 through 5	Deny R&PP Act Application
3.) Changes in management of surrounding public lands	1 through 4	No change - Continue existing management (Alternative 5)

4.6 Summary Of Elements Of The Proposed Action Which Could Result In Environmental Impacts

The elements of the proposed action which could result in impacts upon the environment are discussed in detail in Chapters 1 and 2. The following is a brief review of some of the major elements which could result in impacts upon one or more aspects of the environment. These are discussed in greater detail in the next section, according to the level of potential effect upon each resource.

- The proposed action would result in 120 acres of federal public land being transferred to the State for the purpose of construction of a new State and BLM Interpretive Center.

- The 120-acre parcel would be fenced and removed from livestock grazing, although no change in livestock management on the surrounding grazing allotment is required.

- Ground disturbance would result from the construction of the proposed Center and its ancillary facilities, as described in Chapter 2.

- Socorro Country road 255 will require widening to standards to accommodate two-way traffic. It may also require a new intersection with NM 1.

- Entryway features may be constructed along Socorro County 255 as described in Chapter 2.

- Electrical power and telephone lines will be required for the proposed Center, utilizing rights-of-way to be applied for by the supplying utility companies.

- If constructed, the proposed Center would attract a substantial number of visitors to an area which was seldom visited previously. Estimates range from a low of 27,000 to a high of 106,000 visitors per year. An approximate median of 60,000 per year is a conservative estimate during the initial years of operation.

- If horse trails are established for the public's use with personally owned horses, non-weed-free hay could introduce invasive or noxious weeds.

4.7 Impacts and Mitigating Measures For Specific Resources

Each of the resource areas that follow have analyzed the proposed alternatives to determine if effects upon that resource are likely to occur. If negative effects are possible, recommendations for methods of reducing adverse effects are provided. Cumulative effects, as well as any unmitigateable effects or irretrievable commitments of resources, are discussed in Section 4.9.

The proposed transfer of 120 acres of public lands and construction of the foreseeable elements of the proposed Center are common to Alternatives 1 through 5 (with the "No Action" alternative being to reject the R&PP Act application of the State, in which case, no facilities would be constructed). For most resources, Alternatives 1 through 5 present little or no difference in potential impacts, and they are only singled out in the following discussions when some difference exists.

4.7.1 Climate

No impacts to climate are anticipated under any of the proposed alternatives.

4.7.2 Air Quality and Sound Quality

Alternatives 1 through 4: Of the 120 acres included in the potential land transfer, nearly 2 acres of existing road surface (two-thirds mile long, twenty-four feet wide) and less than five acres of land (four acres for the museum and one-third acre for the residence) would be disturbed during construction. Construction equipment emits carbon monoxide, oxides of nitrogen, and sulfur dioxide (due to trace levels of sulfur contained in diesel fuel), however, the largest amount of air pollution would be particulate matter (fugitive dust) from wind erosion of exposed areas. During construction, exposed areas should be watered as needed to achieve a fifty-percent control level. Since these impacts are temporary, it is unlikely any air quality emission permits would be required by the State of

New Mexico, Environment Department, Air Quality Bureau. The access road should be treated (with gravel or other sufactants) to minimize fugitive dust from vehicular traffic. Once construction is complete, no measurable air quality impacts are anticipated. However, a minor level of decreased air quality and increased noise are an irreversible or irretrievable commitment of resources that would occur if the proposed Center is constructed and operated as proposed..

Elevated noise impacts are likely during construction (from earth-moving equipment, construction traffic and activities, etc.), and background noise levels would rise with increased traffic, although these impacts are not anticipated to be noticeable.

Alternatives 1 through 4 differ in the amount and location of "Avoidance" areas. Avoidance areas would to some extent reduce the potential for future air quality or noise impacts.

Alternative 5 would allow more forms of development in the future, but each action would be subject to its own analyses and effects would be subject to mitigation.

The "no action" alternative (of not transferring the 120 acres and not constructing the Center) would eliminate the short-term potential for air quality and noise impacts, but leave the area more prone to development which might negatively affect air quality and noise in the future.

Air Quality Mitigating Measures: During construction, exposed areas should be watered as needed to achieve a fifty-percent control level. The access road should be treated (with gravel or other sufactants) to minimize fugitive dust from vehicular traffic, and maintained to prevent visible dust along Socorro County Road 255. Construction contractors and facility operators should be responsible for assuring all activities comply with applicable local, state and Federal air quality laws, regulations, standards and implementation plans.

4.7.3 Geology and Topography

No effects upon geology are anticipated. The proposed facilities should have no effect upon topography other than the immediate construction area. The structures and other facilities are designed to incorporate the topography of the specific site and no adverse effects are anticipated.

4.7.4 Water Resources

Ground Water

For all alternatives except the "no action," the proposed water well will increase ground water usage from the aquifer. Uses at the Center and the residence are for domestic purposes and to irrigate landscape vegetation at the Center. Usage is estimated to be approximately one million gallons of water per year. However, the proposed design incorporates a cistern to collect rainfall from the roof of the museum building for landscape watering, and this may supplement ground water requirements during period of rainfall. Ground water levels will decrease to a small extent because of the cone of depression developed around the well. Usage from this well is not expected to affect the other well in the area. Water quality in the aquifer is not expected to be affected by the well.

Mitigative measures: The proposed design element of a cistern to collect runoff for plant watering will somewhat mitigate demands upon groundwater. The septic system must be built to state standards and permitted by the New Mexico State environmental Department. Because of the depth to ground water and the favorable types of soils at the leach field, the system is not expected to impact ground water.

Surface Water

Surface Water will be affected by the site and the road. Increased runoff and sediment discharge to nearby drainages is expected during site and road construction. After construction and erosion control "Best Management Practices" (BMPs) are implemented, runoff and sediment discharges are expected to be near normal amounts.

Non-Point Source and Point Source Pollution

Non-point source pollution will not occur from the site or the road (this type of pollution by definition is "point source").

The Center site and the access road are possible sources of point source pollution. During construction at the site and the road soil disturbances will increase water erosion and soil blowing. Sediment yields will increase and increased amounts of dust will be released to the atmosphere. These increased erosion rates will be short term occurring only during construction periods. After construction and in the long-term, BMPs (described below in Section 4.7.8) will be implemented to reduce or stop erosion.

Alternatives 1 through 4 could decrease, to some degree, potential effects upon ground and surface water in the future, by varying levels of restrictions on ORV use and future

actions. Alternative 5 would allow greater potential future effects, but all new actions would be subject to NEPA analysis and such effects could be expected to be controlled or mitigated.

Water Resources Mitigating Measures: Control on-site erosion through design and construction measures as described in Chapter 2. Ensure water well and septic systems are constructed and operated to State of New Mexico standards.

4.7.5 Wild and Scenic Rivers

No wild and scenic rivers will be affected by the proposed action or management alternatives.

4.7.6 Wetlands and/or Riparian Areas

The Rio Grande riparian area is located approximately one mile east of the proposed location. The primary potential for effect upon the riparian area would be from changes in runoff which could result from construction of the proposed facilities. Mitigating measures for run-off and on-site erosion are covered in Section 4.7.4 Water Resources (above) and Section 4.7.8 Soils (below).

4.7.7 Flood Plains

Same as Section 4.7.6 above.

4.7.8 Soils

For Alternatives 1 through 5, soil disturbances will occur from site construction and access road widening. During construction and in the short-term, increased wind and water erosion will occur. After construction, the site and the road should be monitored for erosion. If localized erosion occurs, mitigation measures, as listed below, should be utilized to reduce erosion. After construction sediment yields from the site and the road should be near normal rates. In the long-term, soil blowing along the road may be at higher rates because of traffic disturbances and regular maintenance.

Alternatives1 through 4 could decrease, to some degree, potential effects upon soils in the future, by varying levels of restrictions on future actions. Alternative 5 would allow greater potential future effects, but all new actions would be subject to NEPA analysis and such effects could be expected to be controlled or mitigated.

Soils Mitigating Measures: The goal is to reduce soil losses. Areas around the site that

concentrate surface flow and have the potential to erode should be armored with erosion control materials that are designed for minimal visual impact to visitors. These may include concrete drop structures, silt fences, geowebs, rocks, or rock and wire gabions. Other bare areas will be planted with natural vegetation to reduce soil blowing and water erosion. Proper road engineering designs must be used to construct the access road. The road must be properly crowned. Bar ditches should be used on each side of the road and turnouts placed at proper intervals to divert runoff away from the road . Proper treatment of the road surface must occur to reduce blowing dust as described in Section 4.7.2.

4.7.9 Locatable Minerals

For Alternatives 1 through 5, if the proposed 120-acre tract is transferred to the State for use as a new State and BLM Interpretive Center, the tract will no longer be available for mineral entry. However, the mineral report (Appendix C) indicates that the potential for locatable minerals is low and, therefore, no effect is anticipated.

Since mineral potential is low, major development operations for extracting locatable minerals which could affect the proposed Center are unlikely. Therefore, it is also unlikely that changes in management of the surrounding public land would affect mineral development. Unseen areas within the landscape could provide flexibility in locating mineral facilities in the unlikely event that discoveries are made in the future. The “No Action” alternative would allow unrestricted extraction operations, but the low probability of locatable minerals makes effects unlikely.

4.7.10 Mineral Materials

Mineral materials consist of industrial materials such as rock, sand, and gravel. Management of mineral materials is not covered under the mining law, and sales are discretionary. Alternatives 1 through 5 include transfer of public lands to the State and the construction of the proposed Center. This would remove 120 acres of potential minerals material source. However, the same material sources are uniformly present along the western terraces of the Rio Grande. Sand and gravel resources in the area are not unique to the study area, and alternative sources are readily available in the region. Under the four alternatives which include management stipulations for surrounding public lands, visible and/or noisy mineral material pits and processing operations could be inconsistent with the VRM Class I or Class II designations. However, the alternatives include flexibility for locating mineral materials operations in unseen areas where visibility and noise may be controlled, and alternative sources of mineral materials are available on public lands west of I-25 and north and south of the alternative areas. No net effect upon the availability of mineral materials should result from any of the proposed alternatives.

4.7.11 Leasable Minerals

Transfer of the proposed site to the State will remove 120 acres from potential leasing for leasable minerals such as coal, gas, or oil. However, there is no known potential for leasable minerals in the vicinity of any of the proposed action so no effect is anticipated.

Alternatives 1 through 4 include amendment of the RMP to include Socorro Gas And Oil Stipulation 3 (SRA-3) for no surface occupancy in either the Level I or Level II Avoidance areas. The alternatives differ in size and location surrounding the proposed Center, however no effect upon leasable minerals is anticipated since no resources are expected in the vicinity. Alternative 5 would have no effect upon leasable minerals.

4.7.12 Solid and Hazardous Wastes

For Alternatives 1 through 5, during construction hazardous materials may be used at the site. These chemicals are the types customarily used during construction activities. Proper procedures will be followed during use and disposal of any hazardous materials. After construction is completed, only hazardous materials which are normally used or stored at this type of facility and the residence will be present. These include cleaning agents, paints, lubricants, and pesticides.

Solid and hazardous wastes would not be affected by any of the alternatives proposed, although future issues regarding wastes might be lessened somewhat if any of Alternatives 1 through 4 is selected. Alternative 5 allows the most potential future development with a corresponding increase in issues related to hazardous waste.

4.7.13 Vegetation

Alternatives 1 through 5 will result in vegetation within the proposed Center being impacted by construction of facilities (e.g. visitor center, parking lot, caretaker's residence, walking trails, etc.). The vegetation to be impacted consists mainly of creosote bush. After construction of the Center, areas will be revegetated with native plant species. Livestock use along the exterior, fenced boundary of the compound may increase as livestock trail around the fence to access a water well located below the Center to the east, and a pipeline trough that is located to the west. This effect is not likely to warrant mitigation.

Alternatives 1 through 4 could result in fewer disturbances of native vegetation by reducing the number of approved surface disturbing activities. However, the low number of anticipated proposed action in the area suggests that positive or negative effects upon vegetation would be negligible under any alternative. Alternatives 1 through 4 would limit vehicle use to existing roads and trails, which would have a beneficial effect by preserving

native vegetation. Alternative 5 would retain the "open" ORV designation, as well as possible future authorized actions, which poses greatest potential for adverse effects upon vegetation and forage for livestock and wildlife.

4.7.14 Forestry

There will be no effect on this resource from any of the proposed action or alternatives.

4.7.15 Prime and Unique Farmlands

There will be no effect on farmlands from any of the proposed action or alternatives.

4.7.16 Livestock Grazing

Alternatives 1 through 5 would transfer 120 acres of federal public land to the State for the proposed Center which would remove that acreage from the grazing allotment. The 120-acre area will be fenced and excluded from livestock grazing. Public access down County Road 255 will continue as in the past, and access will remain open. However, cattleguards will exclude livestock from the 120-acre compound and public and livestock use will not conflict within the area. No rangeland improvements are present within the proposed Center location.

In accordance with the Grazing Regulations (43 CFR 4110.2-4) the allotment boundary will be modified to exclude120 acres from grazing. Since the amount of forage acres being removed from the allotment is minimal according to the BLM forage survey of the proposed 120-acre area (approximately 0.4 cows year-long), there is no need to adjust livestock carrying capacity.

The long-range plan for the Center includes the designation of a public trail to connect the Center with Fort Craig. The trail most likely would follow the river corridor, utilizing existing Bureau of Reclamation (BOR) roads. The BOR is currently preparing a Resource Management Plan for lands managed on the Rio Grande in this area, which may or may not find that such a trail is feasible. If BOR determines that it is feasible, the BLM will consult with BOR, and the affected grazing permittees and analyze the impacts of such a proposal on livestock grazing within the area.

Any future range improvements will be analyzed in a site specific EA, and in compliance with the Socorro RMP/Amendment.

The Scott Ranch consists of eleven pastures totaling 29,550 acres of rangeland. The pasture where the proposed Center is proposed to be located consists of approximately 4,100 acres. Livestock numbers within this pasture are light in comparison with total

surface acres. The county road will not be fenced under the proposed action and livestock use in the area will remain under the State of New Mexico open range policy. Under the current operation, livestock numbers within this pasture will increase for a few days each fall, usually between mid- and late-November. This is an operational need, since the only access to the west half of the allotment is under I-25 through the pasture where the Center is proposed. Livestock are gathered each fall on the entire allotment and calves are shipped at this time. The public will be able to view livestock in the area and a working cattle ranch operation, which is consistent with themes of New Mexico history to be interpreted at the proposed Center.

Alternatives 1 through 4 include management stipulations for various surrounding public lands. Range and grazing improvements do not involve rights-of-way and therefore are not specifically excluded under any of the alternatives. Livestock facilities also tend to be low-visibility and flexible in location so, for example, corrals can be located in unseen areas within visual management areas without effect. However, all new grazing facilities are analyzed in site-specific EAs. Livestock facilities which could affect the visual management areas, such as skylined water storage tanks, should be considered on a case-by-case basis through a site-specific EA, and mitigated, if needed, through adjustments in location, or other means. Mitigation measures may include such methods as painting future storage tanks and water troughs a certain color in order to blend in with the surrounding area.

Alternative 5 would have no direct effect upon livestock grazing, but if Alternatives 1 through 4 are selected, the possible limitations on rights-of-way and other actions surrounding the proposed Center could help stabilize grazing as the predominant land use.

Livestock Grazing Mitigation Measures:

County Road 255 should be posted to indicate open livestock use within the area. Cattleguards must be installed on the access route leaving State Road 1, and on the boundaries of the 120-acre compound to allow public access down County Road 255, and prevent cattle from either leaving the pasture or entering the proposed compound. A traffic counter should be used to determine if a vehicle speed limit is needed on County Road 255. If “processional markers” are constructed along County 255, livestock barriers (fencing) will be needed, which may be aesthetically inconsistent with the purpose of the markers.

4.8.17 Wildlife

Alternatives 1 through 5: Both negative and positive impacts to wildlife species can occur within the proposed Center compound as changes to the vegetative cover occur as a result of the construction of the building and the associated facilities. Negative impacts to bird

and rodent species, which depend on seeds as a major component of their diet can occur if a percentage of plants do not complete their full life cycle. A decrease in vertical structure of vegetation can negatively impact ground nesting birds, small rodents, and reptile species by reducing cover for protection from weather and predators. Conversely a reduction in cover in some areas can facilitate foraging by ground dwelling species that are able to more easily move in less dense vegetative stands. A reduction in overhead cover can also favor predator species that hunt by sight and potentially improve their foraging success. Plant communities can also have accelerated rates of invasion by exotic species if these communities are disturbed as with construction. This conversion can have detrimental impacts to the native wildlife species dependent on the community but favorable impacts to wildlife species adapted to non-native environments.

Indirect impacts to wildlife also occur from the increase in human activities. The negative impact of fences to large ungulate movement is well documented in the scientific literature. Un-maintained fences and fences built without consideration for wildlife can cause both direct and indirect mortalities to wildlife.

Human presence can also indirectly impact species by precluding the use of water developments in the area. The greatest impact is in the ability of wildlife to utilize areas which formerly may have been used only on a seasonal basis. Smaller wildlife species such as birds and bats may benefit from the increased availability of water in areas of buildings and the associated landscaping and from an increase in insects associated with the human influence.

Predatory species can also be impacted both directly and indirectly by buildings and human presence. The increased presence of people in the area will provide additional food sources for small animals which in turn will provide additional food sources for predators such as birds of prey and coyotes. This in turn can lead to increased predation levels on wild prey species preventing recoveries from natural climate fluctuations.

Another impact to wildlife populations is the large amount of associated vehicular and foot access. These actions act to fragment habitat for small species; and if use on the roads and trails is substantial, large species may abandon otherwise suitable habitat near these routes. In some cases research has shown that large ungulates such as mule deer will substantially reduce their use of habitat within 1/2 mile of these routes.

Fencing impacts are mitigated to some degree by design requirements that allow for wildlife to negotiate these barriers after a learning period and by requiring the maintenance of fences to BLM specifications. Fences have also been known to hamper low flying bird species, particularly raptors. Previous efforts by the BLM to blend fence developments into the landscape and reduce their visibility may actually have been counter productive from a wildlife standpoint. By utilizing watershed Best Management Practices, project

design mitigation, and timing restrictions, long term negative impact to wildlife species can be avoided.

The primary access route to the proposed Center lies on an open, relatively flat ridge top. Large ungulates, such as Mule deer, would tend to move between the uplands on the west and the Rio Grande flood plain on the east by following the dissected drainages which parallel the county road, approximately ½ mile distant to the north and south. As noted above, ½ mile is approximately the range of human activity required before Mule deer alter their use of portions of their habitat. The construction and operation of the proposed Center will probably cause some species such as Mule deer to reduce their use of the immediate area, but not affect the general ability of game movement to and from the river.

The avoidance area of Alternatives 1 through 4 would have no negative effects upon wildlife. Depending upon the level of limitation of future large-scale development in the alternative zones, the effects upon wildlife could range from neutral to positive by limiting future habitat fragmentation and other effects, as described above.

Alternative 5 would allow greater numbers of future actions which could add to cumulative effects upon wildlife through fragmentation of habitat and other physical intrusions. However, under the "No Action" alternative, all future proposed actions would be subject to site-specific environmental analyses and effects and cumulative effects would be evaluated on a case-by-case basis.

4.7.18 Threatened or Endangered Species

Alternatives 1 through 5: On February 24, 2000 the Socorro Field Office received from the U.S. Fish and Wildlife Service a "No Effect Finding" on the proposed action for the public lands within the proposed 120-acre site. No federally listed T&E plant or animal, or potential habitat was identified in the site.

As with wildlife above, Alternatives 1 through 4 for management of the surrounding public lands would have neutral to positive effects upon any threatened or endangered species in the vicinity of the management areas. Alternative 5 could result in future actions which would be analyzed on a case-by-case basis through site-specific EAs.

4.7.19 Wild Horses

No wild horses will be affected by the proposed action.

4.7.20 Cultural Resources

All alternatives: The BLM has conducted an archeological survey of the proposed 120-

acre site. One archeological site was recorded, consisting of 26 red siltstone artifacts, probably from a single occurrence of chipping activity. This site was determined not to be eligible for the National Register and requires no further mitigation.

Alternatives 1 through 4: Archeological site density in the upland, creosote ridge environment is extremely low. However, under these alternatives, vehicle use would be limited to existing roads and trails, which generally benefits archeological resources by reducing inadvertent impacts from vehicle disturbance.

Alternative 5 would not directly affect archeological or historic resources, since any authorized actions on public lands are subject to Section 106 review (under the National Historic Preservation Act), and all actions would be analyzed to minimize effects upon these types of resources. However, archeological resources are subject to inadvertent impacts from off road vehicle use, and these impacts could occur under both Alternative 5 and the no action alternative, since no limitations on ORV use would occur.

4.7.21 Native American Religious Concerns

None of the tribes contacted during scoping raised any issues concerning the proposed action. However, since Piro Pueblo culture will be interpreted in public information materials at the proposed Center, personal contact was made with Isleta del Sur Pueblo in El Paso, Texas, and Isleta del Sur will review materials as they are prepared for interpretation of their ancestral culture.

4.7.22 Paleontological Resources

No evidence of paleontological resources was found during the field survey. If any evidence should be revealed during future construction activities, any disturbance should be immediately stopped and the BLM Regional Paleontologist should be contacted.

4.7.23 Visual Resources

Alternatives 1 through 5: Protection of the viewing area and the characteristic landscape surrounding the Center would maintain the historic setting of the Camino Real. While the Center itself would be a noticeable addition to the landscape, it is intended to be a focal point and destination point, and designed to compliment the surrounding landscape. The design incorporates the exact topography of its proposed location, including an existing drainage, which would serve as an opening for windows from the lower, below-ground level. The proposed trails within the 120-acre compound are intended to give visitors a sense of being on the natural landscape and therefore, no major alterations of the terrain are planned.

Alternative 1: The VRM classes proposed for this alternative would be VRM Class I (9,632 acres) in the Avoidance Level I Area and VRM Class II (6,082 acres) in the Avoidance Level II Area (please refer to Alternative 1 (Map 3)). Appendix A provides definitions of both Avoidance Level I and Avoidance Level II. By managing the viewing area within these two VRM Classes, the historic setting of El Camino Real would be maintained. The Center would be the primary viewing location, or Key Observation Point (KOP), for visitors using the area. Additionally, views along the access road to the Center are of concern in maintaining the scenic quality of the area.

Alternative 2: The impacts of this alternative would be the same as Alternative 1 with the only difference being the addition of a "strip" of Level I area along the east side of NM 1 to protect the view of visitors approaching the proposed Center from the north or south. This would bring the total to 10,913 acres managed as VRM Class I and 4,801 acres as VRM Class II (see Alternative 2 (Map 4)). This alternative would add greater protection of the viewing area along Highway 1.

Alternative 3: The impacts in this alternative would be similar to those described in Alternative 1, except the avoidance areas are smaller and conditioned in part by areas that can actually be observed from the proposed Center location. Avoidance Level II Areas would include 3,456 acres and the Avoidance Level I Area 8,506 acres (see Alternative 3 Map). The Avoidance Level II Areas would be managed as VRM Class II, and the Avoidance Level I Area, VRM Class I.

Alternative 4: This alternative includes a large Avoidance Level II area, with no Level I avoidance area. Thus, the potential for impacts to visual resources within the project area would be greater. By not excluding actions which could dominate the landscape (as in Level I designation), the scenic quality of the lands surrounding the proposed visitor center could be reduced over the long term. The approximately 16,033 acres within the Avoidance Level II Area would be managed as a VRM Class II. This alternative would provide a lesser degree of protection to the viewing area of the project area than Alternatives 1 through 3.

Alternative 5: Under this Alternative there would be no change in stipulation on surrounding public lands, no change in the ORV "Open" designation, and no change in oil and gas stipulations. The present Visual Resource Management (VRM) Class IV would be maintained. The visual resource objective for Class IV allows for activities to dominate the view and be the major focus of viewer attention. Not protecting the viewing area and allowing activities to dominate the view would degrade the scenic quality of the area and alter the characteristic landscape over the long-term. With few restrictions on developmental activities, the historic setting of the Camino Real would be impacted and opportunities for management of the Camino Real and surrounding lands, as described in

the Proposed Action, would be reduced or eliminated over time.

4.7.24 Areas of Critical Environmental Concern, Research Natural Areas, Special Management Areas

No Areas of Critical Environmental Concern, Research Natural Areas, Special Management Areas will be affected by the proposed action or alternatives.

4.7.25 Wilderness and Wilderness Study Areas

No Wilderness or Wilderness Study Areas will be affected by the proposed action or alternatives.

4.7.26 Recreation

Alternatives 1 through 5: Due to the historical significance of El Camino Real de Tierra Adentro, a wide range of potential recreation management opportunities would be created by the construction and operation of the proposed Center. The operational plan for the Center to become a central point for outreach and cooperation with satellite centers and special events all along the lower Rio Grande corridor in New Mexico (El Viaje plan) would provide a variety of recreation, and environmental and cultural education opportunities far beyond the immediate location.

Congress and the President have designated El Camino Real de Tierra Adentro as a National Historic Trail. The New Mexico Division of State Parks has also designated it as a Scenic Byway. These actions at the state and federal levels indicate the high public interest which could be served through the Center becoming a focal point for educational activities in the surrounding communities. In this way, the Center's recreation potential (as well as other areas, such as economic), includes the communities of the lower Rio Grande which it is intended to serve.

The proposed location of the Center was not identified in the Socorro RMP as an area of exclusion or avoidance of rights-of-way as described in previous sections of this document. The project area is currently designated as "Open" to Off-Road Vehicle (ORV) use in the Socorro RMP. Several routes, which presently exist within the project area, provide motorized recreation opportunities (Map 2 shows existing roads). General recreation uses include sightseeing, and hunting for deer and quail. The existing Socorro County road (255) passes into private land before reaching the Rio Grande, so access to the river along this road is not open to the public. Currently, visitor use in the area is estimated to be at 1,000 visitors or less per year. It is estimated that the El Camino Real Heritage Center would receive approximately 60,000 or more visitors per year (this is a

conservative median estimate basted on the range of visitation estimated by El Viaje study).

Hunting would not be permitted within the proposed 120-acre Center compound, and no shooting would be allowed within 150 yards of the Center buildings, as prescribed by New Mexico law. However, hunting would not be eliminated in the avoidance areas under any alternative.

Alternatives 1 through 5 would result in a net positive effect upon recreation opportunities in the region, since the Center would be constructed to provide a wide variety of recreation, interpretation, and environmental education opportunities for thousands of visitors. Trails associated with the Center would also provide hiking and possibly horseback riding opportunities over the long-term. Tourism, related to the entire Camino Real, would also develop over time and provide additional recreation and economic opportunities.

Alternative 1: Recreation uses such as hunting and sightseeing would continue as they have in the past. Vehicle use would be limited to designated roads and trails in the Level I and Level II Avoidance areas indicated on Alternative 1 (Map 3). Therefore, opportunities for both motorized and non-motorized recreation would continue to exist.

Alternative 2: The impacts of this alternative would be the same as Alternative 1, except the geographic area is indicated on Alternative 2 (Map 4).

Alternative 3: The impacts in this alternative would be similar to those described in Alternative 1, except the geographic area is indicated on Alternative 4 (Map 5).

Alternative 4: This alternative would be similar to Alternative 1, however more development and surface disturbing activities could potentially occur within the project area which would be an Avoidance Level II Area only (no “Avoidance Level I” area). Recreation impacts would be similar to those described in Alternative 1 but recreation opportunities could be reduced over time, if new development occurs within the area. ORV designation would be changed to “Limited to existing roads and trails” within the Avoidance area. Therefore, opportunities for both motorized and non-motorized recreation would continue to exist.

Alternative 5: Under this alternative, the Center would be constructed, but no changes in the VRM Class IV designation would occur. This would result in approximately the same recreational opportunities away from the immediate Center location, but the experience of visitors to the Center could become significantly impaired over time if growth and development occur without concern for the taxpayers’ investment in the Center.

Alternative 6 (No Action): Under the No Action Alternative, approximately 120 acres of public land would not be transferred to the State of New Mexico and the Center would not be built. Therefore, no recreation, interpretation, or cultural and environmental education opportunities would be developed for the Center, or by the Center for the lower Rio Grande communities. Thousands of potential visitors would be deprived of these opportunities to utilize and or better understand the historic trail and its effect upon the Southwest. The current Off Road Vehicle (ORV) designation of "Open" would be maintained. This designation allows for and could result in additional roads which could reduce the semi-primitive recreational opportunities of the area. New roads could also negatively impact a variety of other resources, including vegetation, wildlife, cultural sites, and visual resources of the area.

4.7.27 Utility Corridors

No utility corridors are present within the 120-acres proposed site of the Center. If the Center is constructed, power and phone lines will be required to serve the facility. The project design includes provisions for above ground and below ground designs to minimize visual impacts upon the Center.

Alternatives 1 through 4: The preferred corridor for high-visibility facilities, such as additional electrical transmission lines or large-diameter pipelines would be the west side of I-25, and future applications for rights-of-way in this area would be evaluated by the authorized officer in terms of effects upon the Center and mitigating measures may be applied. Within the Avoidance Level I and Avoidance Level II areas of each alternative, the criteria described in Appendix A would be applied within the areas indicated on the Alternative maps.

Alternative 5: Continuation of the existing management practices under VRM Class IV criteria would allow rights-of-way authorizations which could include major alterations of the landscape. Such major alterations would not be consistent with the purpose of the proposed Center.

4.7.28 Social and Economic Conditions

Alternatives 1 through 5:

Construction Phase

The construction of the Center will provide positive, short-term economic benefits to the Economic Study Area (ESA) through employment and income opportunities. The amount of the benefit to the ESA will depend on where supplies and materials are purchased and how many local personnel are hired to do the construction.

Operations Phase

Between four and seven jobs would be created at the Center, which would provide steady income in Socorro County which has the lowest per capita income of all counties in the ESA. With the exception of one on-site employee, the Center employees will require housing, and all will require other goods and services purchased in the local communities. In addition to the jobs at the Center, visitors to the area will create income and employment for the ESA. The El Viaje study (1994), estimated annual visitor use of the Center in the range of 27,000 to 106,000. These figures have been reviewed as a result of public comments received during the scoping process and in comparison with visitor figures for other public sites along the I-25 corridor in southern New Mexico.

Visitor use at the Bosque del Apache National Wildlife Refuge (about 25 miles north of Center on same frontage highway, NM 1) is estimated to be 120,000 visitors per year. Visitor use at Fort Seldon State Monument is estimated to be 12,000 - 15,000 per year. (Fort Seldon is about 50 miles south of the Center, near Las Cruces.) Based on this comparative data, visitor use for the Center is conservatively estimated to be approximately 60,000 per year, during the initial years of operation.

Using the expenditure data from the El Viaje study, the average amount spent per visitor to New Mexico per day is $95.00. As an added destination in the southern I-25 corridor, the Center would contribute to the $5,700,000 benefit represented by the estimated 60,000 visitors who would include the Center in their visit to southern New Mexico. An estimated 99 jobs additional jobs would be created in the ESA by this volume of visitor expenditure. These additional jobs may not be attributed solely to operation of the Center, but would be the cumulative result to which the Center would contribute. Since the Center is located between the City of Socorro in Socorro County, and the City of Truth or Consequences in Sierra County, most of these new jobs would benefit this area. The new jobs created would represent less than one percent of the workforce of the two county areas, and would not be a significant change to the areas employment, but would contribute to overall economic growth in an area with very high poverty levels.

Alternatives 1 through 4: These alternatives would limit rights-of-way in different geographic areas surrounding the proposed Center. Limitations on rights-of-way could affect economic development from certain types of actions as defined in Appendix A. However, locations for north-south rights-of-way along the I-25 corridor are included in all of the alternatives, and no effects upon presently foreseen actions would occur. All regional electrical providers were invited to participate in scoping and no issues concerning electrical rights-of-way were identified.

Alternative 5: If the existing management situation is allowed to continue without right-of-way avoidance provisions, any economic benefit to future right-of-way applicants may

be off-set by negative impacts upon the number of visitors to the Center with a corresponding decrease in expenditures in the region by those visitors.

No Action Alternative: If the State's application for the proposed Center is rejected, none of the projected economic benefits to Socorro and the adjoining counties of the lower Rio Grande will occur.

4.7.29 Transportation

Alternatives 1 through 5: Access to the proposed Center location is via I-25 Exit 115, then south approximately 1.5 miles on NM 1. Both existing routes are capable of handling any increases in traffic caused by the presence of the proposed Center. However, the intersection of NM 1 and Socorro County 255 will probably need modification. When traveling south on NM 1, the highway curves first east, then west, around the Fort Craig Rest Stop which faces west, serving the northbound lanes of I-25. The intersection of NM 1 and County 255 is located on a steeply banked curve, which slopes away from the intersection. This issue was raised during scoping, and will probably require modification of the intersection for safety. County 255 will also require widening and construction to standards for two-way traffic.

Another issue raised during scoping was whether or not access would be provided to the Center from either or both I-25 Rest Stops. Any decision on access from the rest area(s) would be determined by the NM Highway Department in accordance with state and federal highway policies.

Adequate signing to direct visitors safely on approved routes from I-25 to the Center will be needed.

4.7.30 Land Use and Zoning

The primary use of the study area for grazing will not be affected. Socorro County has no zoning ordinances which would affect the proposal or any of the alternative for management of surrounding public lands

4.7.31 Invasive Or Noxious Weeds

Disturbance of the soil surface and the influx of construction equipment, passenger vehicles, and people increase the possibility of introduction of invasive/noxious weeds. Revegetation of bare areas with native plant species after construction will help to mitigate weed establishment. The inspection and cleaning of all construction equipment to remove weed seed and other reproductive plant parts prior to bringing the equipment into the Center and associated roads and trails will control weed introduction. The Socorro Field

Office of the BLM is a participant in the Socorro County Strategic Plan For Managing Noxious Weeds, which includes provisions for monitoring and treatment of noxious weeds. Through BLM's participation in the proposed Center and continuing management of the surrounding public lands, the Socorro County plan will be carried out for all lands under all alternatives.

4.8 Cumulative Impacts

Cumulative impacts are the total effect, including both direct and indirect impacts, on a given resource or ecosystem of all actions taken, no matter who initiates the actions (federal, state, private).

The proposed location of the Center was selected in large part because actions in the past have not significantly altered the landscape surrounding the site. Two highways (NM 1 and I-25) and a parallel power transmission line lie approximately 3.5 miles west of the location. Previous actions in the vicinity of the site have consisted primarily of low impact facilities for livestock grazing, such as water pipelines and small storage tanks.

If the Center is constructed, in addition to the buildings and facilities within the proposed 120-acre compound, the access road will require up-grading to two-lane specifications, "processural markers" may be installed along the route to the Center, and utility access will be required for power and phones for the facility. These proposed components combine to create the set of impacts considered for each resource above. "Cumulative impacts" then considers how these projected impacts would combine with other actions in the area.

There are no existing facilities in the vicinity of the proposed Center whose impacts would be compounded by those of the Center. The Alternatives 1 through 4 are designed to limit cumulative impacts on visual and noise conditions in the future. Each VRM Alternative would limit, to varying degrees, the types of actions which could occur on public lands near the Center, while retaining public access to the public lands. Neighboring lands along the Rio Grande managed by BOR are habitat for threatened and endangered species, which limits future actions; and the private Armendaris Ranch, east of the Rio Grande, which constitutes a major portion of the critical viewing area, is currently managed as a "conservation ranch." Thus, for the foreseeable future, the cumulative impacts of the proposed Center in combination with potential surrounding actions is extremely low.

4.9 Preferred Alternative

The analyses of the potential effects of the various alternatives of the proposed action upon the human environment have not revealed any potential impacts to any resource

which cannot be mitigated or eliminated through normal, conventional methods. Each resource which might be affected by the proposed action has specified stipulations in this chapter. If these stipulations are carried out, possible impacts will be either eliminated or reduced to acceptable, minimal levels. For example, in the absence of safeguards, the construction of the proposed museum and other facilities could result in localized erosion on the site. The construction plan, therefore, includes stipulations for conventional measures to prevent localized erosion, such as silt fences, revegetation with native species, etc., which should reduce erosion to negligible levels.

No potential impacts have been identified as resulting from the classification of the proposed 120 acre site as suitable for transfer to the State of New Mexico, and no potential impacts from the proposed Center have been identified which cannot be mitigated through normal methods and practices.

The analyses in this document indicate that the creation of the Center will result in a number of positive effects. A positive economic impact to local and regional economies is expected; tourism and length-of-stay would be enhanced; public awareness and education concerning an important epoch of history would be enhanced; opportunities for federal, state, and local partnerships would be expanded through the operation plan; and the State of New Mexico's multi-cultural heritage would be further explained through educational events and exhibits at the proposed Center. These potential positive elements are common to Alternatives 1 through 5, however, the degree to which they can be achieved varies among the alternatives as follows.

Alternatives 1 through 4 include the addition of management stipulations described in Chapter 2 and Appendix A to certain public lands surrounding the proposed Center. These stipulations include:

- Case-by-case review of future proposed actions with "avoidance areas" to ensure that the purposes and use of the proposed Center will not be impacted

- A change in the ORV designation within the avoidance areas from "Open" to "Limited To Existing Roads And Trails

- A change in the Oil and Gas designation to stipulation SRA-3 ("no surface occupancy" as defined in the Socorro RMP, page B-6)

These proposed stipulations would help preserve the public investment in the Center by slowing or limiting visual and noise intrusions on the experience of the public during visits to the Center. Alternative 2 is the preferred alternative since it provides the greatest protection of the landscape surrounding the proposed Center and no negative economic or

resource value effects have been identified. As with all of the alternatives, Alternative 2 allows flexibility and a case-by-case review of future proposed actions within avoidance areas.